Abstract

Switching operations, such as those used in memory devices, are enhanced using a semiconductor device having a thyristor adapted to switch between conducting and blocking states and operate at low power. According to an example embodiment of the present invention, thyristor characteristics are managed over a broad temperature range using a control circuit for coupling a signal, such as a DC voltage signal, to a portion of a thyristor for controlling temperature-related operation thereof, *e.g.*, for controlling bipolar gains. In one implementation, a control port adaptively adjusts a signal coupled to the thyristor as a function of temperature, such that at relatively low temperatures unwanted increases in holding current (I_H) are prevented. In another implementation, the control port couples the signal at relatively high temperature operation for controlling the forward blocking voltage (V_{FB}) in such a manner that a blocking state of the thyristor is held. In still another implementation, a circuit controller is adapted for applying the signal to the thyristor via the control port as a function of temperature by monitoring operation of a reference thyristor. With these approaches, thyristor operation can be maintained in a relatively stable manner over a broad temperature range.